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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/056,232	01/25/2002	Julian Graham Price	U013852-8	6885

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EXAMINER	
PARSA, JAFAR F	

ART UNIT	PAPER NUMBER
1621	

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/056,232	PRICE ET AL.	
	Examiner	Art Unit	
	Jafar Parsa	1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *24-41* is/are pending in the application.

4a) Of the above claim(s) *37-41* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *07/01/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant's election without traverse of Group I, claims 24-36 in the reply filed on 6/14/2004 is acknowledged.

Claim 35 is objected to because of the following informalities: the word "naptha" should be corrected to read naphtha. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 24-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patel et al (USPN 4,886,651) in view of Kemp (USPN 2494561).

Applicants' claimed invention is directed to a process for the production of hydrocarbons and ammonia by using a combined hydrocarbon synthesis process and ammonia synthesis process. Synthesis gas exiting a reforming section of the

hydrocarbon synthesis process is sent to a hydrogen extraction unit, where it is divided into a hydrogen-rich steam and a hydrogen-poor stream. The hydrogen-rich stream is then fed into an ammonia synthesis process. The hydrogen-poor stream may be returned to the hydrocarbon synthesis process or may be used as a fuel gas. One Separation unit is used for both processes. Removal of hydrogen from the hydrocarbon synthesis process before the synthesis gas enters a Fischer-Tropsch reactor have a H2/CO ratio lower than or equal to 2.5.

Patel teaches an integrated process for the production of oxygenated hydrocarbons and ammonia, comprising the steps of: catalytically reforming a first methane-containing stream with steam and carbon dioxide to form a first hydrogen and carbon monoxide-containing synthesis gas, removing carbon dioxide from said first synthesis gas and recycling at least a portion of the carbon dioxide to said reformation, rejecting at least a portion of the hydrogen content of said first synthesis gas to produce a first carbon monoxide-rich synthesis gas and a hydrogen stream, at least partially catalytically reforming a second methane-containing stream with steam and carbon dioxide to form an initial methane, hydrogen and carbon monoxide-containing synthesis gas and further reforming said initial synthesis gas by partial oxidation with an oxygen-enriched gas to result in a second hydrogen and carbon monoxide-containing synthesis gas, removing carbon dioxide from said second synthesis gas and recycling at least a portion of the carbon dioxide to said catalytic reformation, combining said hydrogen stream with a nitrogen-rich stream and catalytically reacting the combined stream to produce ammonia, combining said first and second synthesis gas streams and

catalytically reacting them to produce oxygenated hydrocarbons and a purge stream of residual unreacted synthesis gas at an elevated pressure, and reacting said purge stream to produce oxygenated hydrocarbons. The oxygen-enriched gas is commercially pure oxygen having an oxygen content of at least 95%, optimally 99.5%. Such an oxygen-enriched gas can be produced by traditional air separation processes such as cryogenic, sorptive or membrane techniques, wherein a nitrogen-enriched gas is also produced which is utilized in the ammonia synthesis. Preferably, the hydrogen stream is rejected from said first synthesis gas by a membrane selected for the rejection of hydrogen over carbon monoxide. Preferably, the combined first and second synthesis gas streams have a hydrogen to carbon monoxide mole ratio in the range of 1.5 up to 3.0 (see summary of the invention). Kemp teaches that a portion of carbon dioxide is removed from the synthesis gas before entering the hydrocarbon synthesis reactor and a portion of non-reacted gas is recycled back to a syngas generator (see Figure 1).

The difference between Patel and the claimed invention is that Patel discloses an integrated process for making ammonia and oxygenated hydrocarbons. However, Kemp teaches an integrated process for producing liquid hydrocarbons, oxygenated hydrocarbons along with a process for the synthesis of ammonia (col.1, lines 1-5). Kemp teaches that an air separation unit is used to separate oxygen for oxidation of hydrocarbons and separated nitrogen is used for the catalytic synthesis of ammonia (col. 3, lines 12-25). Kemp teaches that synthesis gas is divided into two portions, one of which is to be used for the hydrogenation of carbon monoxide to produce liquid

hydrocarbons in the gasoline range. The liquid hydrocarbon products are separated into desired fractions, which may be subjected to further treatment of cracking, alkylation, etc. as desired. The other portion of the synthesis gas is used in the preparation of hydrogen for synthesis of ammonia (see col. 6, lines 1-5, and col. 10, lines 50-61).

Kemp teaches that many advantages accrue from the use of a process for the catalytic conversion of carbon monoxide and hydrogen into hydrocarbons in conjunction with a process for the catalytic synthesis of ammonia from its elements. An important advantage is that the nitrogen, which is obtained from air separation unit in the preparation of oxygen, is utilized at least in part. This process provides a means of utilizing at least a portion of nitrogen which would be otherwise be merely a waste product. A second advantage results from the fact that the same catalyst is catalytically active in both processes. By continuously circulating the catalyst from the ammonia synthesis to carbon monoxide hydrogenation reactor to a catalyst regenerator process and then back to the ammonia converter, the catalyst activity is preserved at an optimum in both of the catalytic conversions. Thus maximum yield are continually Obtained from both processes. A third advantage resides in the fact that a common synthesis gas generator provides a source of hydrogen for both the synthesis of ammonia and the hydrogenation of carbon monoxide (see col. 4, lines 21-62).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an integrated process for synthesizing ammonia

and hydrocarbons to increase the efficiency of the process for the reasons stated above.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 33-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Benham et al (USPN 5,543,437).

Benham discloses a diesel and naphtha products obtained from Fischer-Tropsch process (see Figure 4).

Claims 33-35 are considered product-by-process claims.

PRODUCT-BY-PROCESS CLAIMS ARE NOT LIMITED TO THE MANIPULATIONS OF THE RECITED STEPS, ONLY THE STRUCTURE IMPLIED BY THE STEPS

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claims 33-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Kemp et al (USPN 2,494,561).

Kemp teaches liquid hydrocarbon products in the gasoline range (gasoline range contains naphtha and diesel fractions) which is obtained from hydrogenation of carbon monoxide. The liquid hydrocarbon products are separated into desired fractions, which may be subjected to further treatment of cracking, alkylation, etc. as desired. The other portion of the synthesis gas is used in the preparation of hydrogen for synthesis of ammonia product (see col. 6, lines 1-5, and col. 10, lines 50-61).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jafar Parsa whose telephone number is (571)272-0643. The examiner can normally be reached on 8 a.m.-4:30 p.m. (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on (571)272-0646. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

J. PARSA
PRIMARY EXAMINER

Jafar Parsa
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JP